

IN THE CLAIMS:

Please cancel Claim 2 without prejudice to or disclaimer of the subject matter presented therein.

Please amend Claims 1, 6, 7, 9-11 and 13-15 as follows.

1. (Currently Amended) An information processing method of receiving encoded image data compression-coded for each tile and encrypting the encoded image data, characterized by comprising:

repeatedly forming one tile group from a plurality of adjacent tiles and another tile group from a plurality of adjacent tile groups so as to define a hierarchical structure of the tiles and tile groups, ~~and for a plurality of partial encoded data that constitute~~ dividing encoded data of a tile located at a terminal of the hierarchical structure into a plurality of partial encoded data regarding resolution or quality, and arranging the partial encoded data toward the terminal in ~~a ascending descending order of priority in decryption so as to define based on the resolution or quality so that partial encoded data of lowest resolution or lowest quality is arranged at the terminal of the hierarchical structure, thereby defining~~ a tree structure that has as nodes the respective tile groups, the respective tiles, and the respective partial encoded data;

generating encryption key information for a node located at an uppermost layer of the tree structure for an entire image expressed by the encoded image data;

executing, up to a node located at the terminal, processing for generating encryption key information for a node of interest on the basis of encryption key information generated for a node located at an upper layer and a one-way function, so as to generate the encryption key information for each node;

designating, in the tree structure, a desired node among the plurality of partial encoded data;

setting, as an object to be encrypted, partial encoded data designated in said designating step and partial encoded data at a higher layer than the layer of the designated partial encoded data; and

encrypting each partial encoded data set in said setting step using the generated encryption key information corresponding to each node;

when a designation input is given to define, as an object to be encrypted, a desired node position in nodes of the partial encoded data in the tree structure, setting, as an object to be encrypted, partial encoded data which is located at a higher layer and contains partial encoded data at the node position that is defined by the designation input; and

executing encryption processing for each partial encoded data, which is set as an object to be encrypted, by using an encryption key generated for the partial encoded data and outputting the encrypted partial encoded data and unencrypted partial encoded data.

2. (Canceled)

3. (Original) The method according to claim 2, characterized in that the function generates the key information by using coordinate position information of a tile group, a tile, or partial encoded data located at the lower layer.

4. (Original) The method according to claim 1, characterized in that the encryption key information of the uppermost layer is output to a predetermined authentication server on the Internet.

5. (Original) The method according to claim 1, characterized in that
the method further comprises a step of displaying the received encoded data as a hierarchical structure of tiles, tile groups, and partial encoded data, and
the desired partial encoded data of the desired layer is designated from the hierarchical structure displayed in the display step.

6. (Currently Amended) An information processing apparatus for receiving encoded image data compression-coded for each tile and encrypting the encoded image data, characterized by comprising:

means for repeatedly forming one tile group from a plurality of adjacent tiles and another tile group from a plurality of adjacent tile groups so as to define a hierarchical structure of the tiles and tile groups, and for a plurality of partial encoded data that constitute dividing encoded data of a tile located at a terminal of the hierarchical structure into a plurality of partial encoded data regarding resolution or quality, and arranging the partial encoded data toward the terminal in ~~ascending-descending order of priority in decryption so as to define based on the resolution or quality so that partial encoded data of lowest resolution or lowest quality is arranged at the~~ terminal of the hierarchical structure, thereby defining a tree structure that has as nodes the respective tile groups, the respective tiles, and the respective partial encoded data;

means for generating encryption key information for a node located at an uppermost layer of the tree structure for an entire image expressed by the encoded image data;

means for executing, up to a node located at the terminal, processing for generating encryption key information for a node of interest on the basis of encryption key information generated for a node located at an upper layer and a one-way function, so as to generate the encryption key information for each node;

designating, in the tree structure, a desired node among the plurality of partial encoded data;

setting, as an object to be encrypted, partial encoded data designated in said designating step and partial encoded data at a higher layer than the layer of the designated partial encoded data; and

encrypting each partial encoded data set in said setting step using the generated encryption key information corresponding to each node~~means for, when a designation input is given to define, as an object to be encrypted, a desired node position in nodes of the partial encoded data in the tree structure, setting, as an object to be encrypted, partial encoded data~~

which is located at a higher layer and contains partial encoded data at the node position that is defined by the designation input; and

means for executing encryption processing for each partial encoded data, which is set as an object to be encrypted, by using an encryption key generated for the partial encoded data and outputting the encrypted partial encoded data and unencrypted partial encoded data.

7. (Currently Amended) A computer program, embodied in a computer-readable medium, which causes a computer that reads and executes the program to function as an information processing apparatus for receiving encoded image data compression-coded for each tile and encrypting the encoded image data, characterized by comprising:

means for repeatedly forming one tile group from a plurality of adjacent tiles and another tile group from a plurality of adjacent tile groups so as to define a hierarchical structure of the tiles and tile groups, and for a plurality of partial encoded data that constitute dividing encoded data of a tile located at a terminal of the hierarchical structure into a plurality of partial encoded data regarding resolution or quality, and arranging the partial encoded data toward the terminal in ascending-descending order based on the resolution or quality so that partial encoded data of lowest resolution or lowest quality is arranged at the terminal of the hierarchical structure, thereby defining of priority in decryption so as to define a tree structure that has as nodes the respective tile groups, the respective tiles, and the respective partial encoded data;

means for generating encryption key information for a node located at an uppermost layer of the tree structure for an entire image expressed by the encoded image data;

means for executing, up to a node located at the terminal, processing for generating encryption key information for a node of interest on the basis of encryption key information generated for a node located at an upper layer and a one-way function, so as to generate the encryption key information for each node;

designating, in the tree structure, a desired node among the plurality of partial encoded data;

setting, as an object to be encrypted, partial encoded data designated in said designating step and partial encoded data at a higher layer than the layer of the designated partial encoded data; and

encrypting each partial encoded data set in said setting step using the generated encryption key information corresponding to each node means for, when a designation input is given to define, as an object to be encrypted, a desired node position in nodes of the partial encoded data in the tree structure, setting, as an object to be encrypted, partial encoded data which is located at a higher layer and contains partial encoded data at the node position that is defined by the designation input; and

means for executing encryption processing for each partial encoded data, which is set as an object to be encrypted, by using an encryption key generated for the partial encoded data and outputting the encrypted partial encoded data and unencrypted partial encoded data.

8. (Original) A computer-readable storage medium characterized by storing the computer program of claim 7.

9. (Currently Amended) An information processing method of receiving information containing encoded data of both encrypted and unencrypted tiles and reproducing an image, characterized by comprising:

repeatedly forming one tile group from a plurality of adjacent tiles and another tile group from a plurality of adjacent tile groups on the basis of the received information so as to define a hierarchical structure of the tile groups, and for a plurality of partial encoded data that constitute dividing encoded data of a tile located at a terminal of the hierarchical structure into a plurality of partial encoded data regarding resolution or quality, and arranging the partial encoded data toward the terminal in ascending descending order of priority in decryption so as to define based on the resolution or quality so that partial encoded data of lowest resolution or lowest quality is arranged at the terminal of the hierarchical structure, thereby defining a tree structure that has as nodes the respective tile groups, the respective tiles, and the respective partial encoded data;

receiving key information to be used to decrypt a tile containing encrypted partial encoded data;

sequentially generating key information up to desired partial encoded data located at a lower layer of a tile of interest on the basis of the received key information of the tile and a one-way function, so as to generate the key information for each node; and

decrypting each encrypted partial encoded data by using the key information generated for each partial encoded data.

10. (Currently Amended) An information processing apparatus for receiving information containing encoded data of both encrypted and unencrypted tiles and reproducing an image, characterized by comprising:

means for repeatedly forming one tile group from a plurality of adjacent tiles and another tile group from a plurality of adjacent tile groups on the basis of the received information so as to define a hierarchical structure of the tile groups, ~~and for a plurality of partial encoded data that constitute~~ dividing encoded data of a tile located at a terminal of the hierarchical structure into a plurality of partial encoded data regarding resolution or quality, and arranging the partial encoded data toward the terminal in ascending-descending order based on the resolution or quality so that partial encoded data of lowest resolution or lowest quality is arranged at the terminal of the hierarchical structure, thereby defining priority in decryption so as to define a tree structure that has as nodes the respective tile groups, the respective tiles, and the respective partial encoded data;

means for receiving key information to be used to decrypt a tile containing encrypted partial encoded data;

means for sequentially generating key information up to desired partial encoded data located at a lower layer of a tile of interest on the basis of the received key information of the tile and a one-way function, so as to generate the key information for each node; and

means for decrypting each encrypted partial encoded data by using the key information generated for each partial encoded data.

11. (Currently Amended) A computer program, embodied in a computer-readable medium, which causes a computer that reads and executes the program to function as an information processing apparatus for receiving information containing encoded data of both encrypted and unencrypted tiles and reproducing an image, characterized by comprising:

means for repeatedly forming one tile group from a plurality of adjacent tiles and another tile group from a plurality of adjacent tile groups on the basis of the received information so as to define a hierarchical structure of the tile groups, ~~and for a plurality of partial encoded data that constituted~~ dividing encoded data of a tile located at a terminal of the hierarchical structure into a plurality of partial encoded data regarding resolution or quality, and arranging the partial encoded data toward the terminal in ~~a~~ ascending-descending order based on the resolution or quality so that partial encoded data of lowest resolution or lowest quality is arranged at the terminal of the hierarchical structure, thereby defining ~~of priority in decryption so as to define a tree structure that has as~~ nodes the respective tile groups, the respective tiles, and the respective partial encoded data;

means for receiving key information to be used to decrypt a tile containing encrypted partial encoded data;

means for sequentially generating key information up to desired partial encoded data located at a lower layer of a tile of interest on the basis of the received key information of the tile and a one-way function, so as to generate the key information for each node; and

means for decrypting each encrypted partial encoded data by using the key information generated for each partial encoded data.

12. (Original) A computer-readable storage medium characterized by storing the computer program of claim 11.

13. (Currently Amended) A processing method of a server which is connected to a network for providing a decryption key for an image containing encoded data of both encrypted and unencrypted tiles, characterized by comprising:

for a plurality of partial encoded data that constitute encoded data of a tile, arranging the partial encoded data toward a terminal in ~~aseending-descending~~ order ~~of priority in decryption~~based on the resolution or quality so that lowest resolution or lowest quality is arranged at the terminal of a hierarchical structure, and storing basic decryption key information located at an uppermost layer of the image which has a ~~the~~ hierarchical structure constructed by repeatedly forming one tile group from a plurality of adjacent tiles and another tile group from adjacent tile groups; and

when information that designates partial encoded data to be decrypted is received from a client on the network, sequentially deriving, using a one-way function, decryption key information from the basic decryption key to a lower layer until reaching the designated partial encoded data of the designated layer and, when decryption key information for the corresponding partial encoded data is generated, notifying the client of the decryption key information.

14. (Currently Amended) A server which is connected to a network for providing a decryption key for an image containing encoded data of both encrypted and unencrypted tiles, characterized by comprising:

means for, for a plurality of partial encoded data that constitute encoded data of a tile, arranging the partial encoded data toward a terminal in ~~aseending-descending~~ order based on the resolution or quality so that lowest resolution or lowest quality is arranged at the terminal of a hierarchical structure~~of priority in decryption~~, and storing basic decryption key information located at an uppermost layer of the image which has a ~~the~~ hierarchical structure constructed by repeatedly forming one tile group from a plurality of adjacent tiles and another tile group from adjacent tile groups; and

means for, when information that designates partial encoded data to be decrypted is received from a client on the network, sequentially deriving, using a one-way function, decryption key information from the basic decryption key to a lower layer until reaching the

designated partial encoded data of the designated layer and, when decryption key information for the corresponding partial encoded data is generated, notifying the client of the decryption key information.

15. (Currently Amended) A computer program, embodied in a computer-readable medium, which causes a computer that reads and executes the program to function as a server which is connected to a network for providing a decryption key for an image containing encoded data of both encrypted and unencrypted tiles, characterized by comprising:

means for, for a plurality of partial encoded data that constitute encoded data of a tile, arranging the partial encoded data toward a terminal in ~~a~~ascending-descending order based on the resolution or quality so that lowest resolution or lowest quality is arranged at the terminal of a hierarchical structure of priority in decryption, and storing basic decryption key information located at an uppermost layer of the image which has ~~a~~the hierarchical structure constructed by repeatedly forming one tile group from a plurality of adjacent tiles and another tile group from adjacent tile groups; and

means for, when information that designates partial encoded data to be decrypted is received from a client on the network, sequentially deriving, using a one-way function, decryption key information from the basic decryption key to a lower layer until reaching the designated partial encoded data of the designated layer and, when decryption key information for the corresponding partial encoded data is generated, notifying the client of the decryption key information.

16. (Original) A computer-readable storage medium characterized by storing the computer program of claim 15.